UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,423	07/29/2003	Sven Vogler	029115.51238C1	6240

23911 7590 09/27/2004

CROWELL & MORING LLP
INTELLECTUAL PROPERTY GROUP
P.O. BOX 14300
WASHINGTON, DC 20044-4300

EXAMINER	
TSAI, CAROL S W	

ART UNIT	PAPER NUMBER
2857	

DATE MAILED: 09/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/628,423	VOGLER ET AL.	
	Examiner	Art Unit	
	Carol S Tsai	2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *July 29, 2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a) because the blank boxes shown should be labeled as to their function, for example: elements 2, 10, 20, and 22 in Fig. 1; 2 and 10 in Fig. 2; 2, 8, 10, 12, 20, and 22 in Fig. 4; and 12, 22 and 30 in Fig. 5, as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-4, 7, 8, and 11-15 are rejected under 35 U.S.C. 102(b) as being anticipated by U. S. Patent No. 5,187,364 to Blais.

With respect to claims 1 and 3, Blais discloses a method for generating a control output for a position control loop of a movable test object, said method comprising the steps of: optically measuring the position of the test object (mirror 2 shown on Fig. 3) by focusing a measuring beam (laser beam L shown on Fig. 3) generated by a light source (laser 3 shown on

Fig. 3) onto the test object using an optical system, and reflecting the measuring beam from the test object as a focused spot onto a position-sensitive light detector (position sensor 4 and photodetectors 6 and 7 shown on Fig. 3) to obtain measured position information (see Figs. 1-3 and col. 3, line 56 to col. 4, line 21); reading the measured position information obtained from the light detector serially into an analog to digital converter (A/D converters 8 and 9 shown on Fig. 3) to obtain digitized position data and transmitting the digitized position data a digital signal processor (see col. 4, lines 6-11); interpolating the digitized position data in said digital signal processor taking into account a distribution function corresponding to the actual intensity distribution to give a position signal corresponding to the geometric center or the maximum (I_0) of the intensity distribution of the focused measuring spot (see Figs. 4 and 5; col. 5, lines 13-63; and col. 6, line 65 to col. 7, line 19); calculating a desired position of the test object with a system control computer (see Fig. 4A; col. 4, lines 43-45; and col. 5, lines 13-15); supplying the calculated desired position to the signal processor and generating a digital control value by comparing the position signal of the focused measuring spot determined by interpolation with the calculated desired position (see col. 4, lines 11-13); generating an analog control value from the digital control value in a digital to analog converter (D/A converter 14 shown on Fig. 3), and inputting the analog control value into a control loop for regulating the position of the test object (see col. 4, lines 13-22).

As to claim 11, Blais discloses an apparatus for generating a control output for a position control loop of a movable test object, said apparatus comprising: a position sensitive light detector (position sensor 4 shown on Fig. 1); an analog to digital converter (A/D converter 8 shown on Fig. 1) connected to receive measured position information from said light detector; a

signal processor (microprocessor 12 shown on Fig. 1) connected to receive digital position data from said analog to digital converter, the signal processor comprising a memory (buffer 10 shown on Fig. 1) for storing a distribution function, and a digital to analog converter (D/A converter 14 shown on Fig. 1) connected to receive a digital signal from said signal processor and generate an analog position regulating signal therefrom (see col. 3, line 56 to col. 4, line 22).

As to claim 2, Blais also discloses the movable test object being a mirror (mirror 2 shown on Fig. 1).

As to claim 4, Blais also discloses the lower intensity values being suppressed by a predefined threshold value when the geometric center is determined (see col. 4, line 39 to col. 5, line 9).

As to claim 7, Blais also discloses a control output signal being generated for direct control of the mirror position (see col. 4, lines 13-20).

As to claim 10, Blais also discloses the corresponding distribution function being stored in a memory of the signal processor (see col. 6, line 65 to col. 7, line 19).

As to claim 12, Blais also discloses a system control computer for calculating a desired object position, said signal processor being connected to said system control computer to receive a desired object position signal from the system control computer, and said signal processor being programmed to effect a comparison of the desired object position signal to a position signal derived from digitized position data received from the analog to digital converter (see col. 4, lines 6-22).

As to claim 13, Blais also discloses the signal processor being programmed to generate a position control instruction to offset any deviation detected in the comparison of the desired

object position signal to the position signal derived from the digitized position data (see col. 4, line 6 to col. 5, line 34).

As to claim 14, Blais also discloses the signal processor being programmed to determine a maximum intensity or a center of intensity distribution of a focused light spot received by the position sensitive light detector from digitized position data received from the analog to digital converter (see Figs 4 and 5; col. 5, lines 13-63; and col. 6, line 65 to col. 7, line 19).

As to claim 15, Blais also discloses an object position control circuit connected to said digital to analog converter for regulating the position of a moveable object in response to an analog position regulating signal received from said digital to analog converter (see col. 7, lines 20-39).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blais in view of U. S. Patent No. 6,154,270 to Ozawa.

As noted above, with respect to claims 5 and 6, Blais discloses the claimed invention, except for the threshold value being between 20% and 50% of the maximum intensity.

Ozawa teaches the threshold value being between 20% and 50% of the maximum intensity (see col. 8, lines 13-26 and col. 18, lines 35-41).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Blais's method to include the threshold value being between 20% and 50% of the maximum intensity, as taught by Ozawa, in order that a more uniform illumination of pixels can be produced.

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blais in view of U. S. Patent No. 6,437,358 to Potucek et al.

Blais discloses the method being used in a scanning device and test object being a scanning mirror (see Fig. 1; col. 1, lines 11-18; col. 2, line 63 to col. 3, line 2; col. 3, line 56 to col. 4, line 5; and col. 7, lines 20-29).

Blais does not disclose the test object which carries out the scanning process using an additional light source.

Potucek et al. teach the test object which carries out the scanning process using an additional light source (see col. 5, lines 36-43).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Blais's method to include the test object which carries out the scanning process using an additional light source, as taught by Potucek et al., in order that first and second light sources are preferably arranged for separate operation such that, during scanning, illumination from first light source is used to capture an image (including defects), while the second light source is used to capture only image defects (see Potucek et al. col. 5, lines 44-48).

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blais in view of JP410104541 to Haruyama.

Blais discloses the distribution function being input into signal processor (see Figs. 1, 4, and 5 and col. 4, lines 6-22).

Blais does not disclose the corresponding distribution function being determined while the test object is stationary.

Haruyama teaches the corresponding distribution function being determined while the test object is stationary (see Solution, lines 1-11).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Blais's method to include the corresponding distribution function being determined while the test object is stationary, as taught by Haruyama, in order to eliminate the need for synchronizing the movement of a planar type mirror or the detector.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ueno discloses a directive value being provided to the galvanomirror and then changed so that the sub-scanning beam position is shifted in the estimated direction in steps from the position corresponding to the last directive value.

Moehler discloses a control system for a scanner, especially for a laser scanning microscope, with an oscillating motor for driving an oscillating mirror serving for the linearly oscillating deflection of a beam bundle, with a control unit for supplying the oscillating motor

with an exciting current which is variable with respect to the control frequency, frequency curve, and amplitude, with a function generator which is connected with the control unit, and with a measurement value transducer for obtaining a sequence of information about the deflection positions of the oscillating mirror.

Grodevamt discloses a computerized control system for driving a rotor which can carry a laser or a beam deflecting mirror and is actuated by a coil thereon electromagnetically coupled to a fixed magnet or a stepper motor coil.

Kawai et al. disclose an optical interference measuring apparatus and method for measuring displacement of an object.

O'Brien et al. disclose beam scanning system that incorporates an actively-controlled optical head, wherein a light beam source and collimating optics are mounted in an active, thermally-compensated assembly.

Blais discloses a galvanometric optical scanning system.

Shapiro discloses automatic test equipment for determining the optical properties of a test object.

Contact Information

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carol S. W. Tsai whose telephone number is (571) 272-2224. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (571) 272-2216. The fax number for TC 2800 is (703) 872-9306. Any

inquiry of a general nature or relating to the status of this application or proceeding should be directed to the TC 2800 receptionist whose telephone number is (571) 272-1585 or (571) 272-2800.

In order to reduce pendency and avoid potential delays, Group 2800 is encouraging FAXing of responses to Office actions directly into the Group at (703) 872-9306. This practice may be used for filing papers not requiring a fee. It may also be used for filing papers which require a fee by applicants who authorize charges to a PTO deposit account. Please identify the examiner and art unit at the top of your cover sheet. Papers submitted via FAX into Group 2800 will be promptly forwarded to the examiner.

Carol S. W. Tsai
Patent Examiner
Art Unit 2857

09/23/04